

**REMARKS**

The undersigned attorney for applicant thanks Examiner Merkling for the telephone interview held on November 4, 2008, during which the amendments and arguments presented herein were discussed.

In the 10 June 2008 office action, all pending claims were rejected as being unpatentable over the prior art under 35 USC 103(a).

In paragraph 2, Claims 19, 20, 33 and 94 were rejected under 35 USC 103(a) as being anticipated by USP 2,680,065 to Atwell in view of USP 5,306,481 to Mansour.

In paragraph 3, Claims 19-22, 25, 26, 28-31, 33-37, 40-43, 45, 94-99, 101-103, 105-109, 111 and 112 were rejected under 35 USC 103(a) as being unpatentable over USP 5,752,994 to Monacelli in view of Mansour and USP 4,097,361 to Ashworth.

In paragraph 4 of the office action, Claims 19-22, 25, 27-31, 33-37, 40-42, 94-99, 101, 102 and 104 were rejected under 35 USC 103(b) as being unpatentable over Ashworth in view of Mansour.

In paragraph 5 of the office action, Claims 23, 38, 100 and 110 were rejected under 35 USC 103(a) as being unpatentable over Monacelli, Mansour and Ashworth as applied to claims 19, 33, 34 and 96, and further in view of USP 5,624,470 to Tanca

In paragraph 6 of the office action, Claims 23, 38 and 100 were rejected under 35 USC 103(a) as being unpatentable over Ashworth and Mansour as applied to claims 19, 33 and 94, and further in view of Tanca.

Claims 19-23, 25-26, 28-31, 33-38, 40-43, 45, 94-103, 105-112 and 114, as amended, are pending.

**Amendments to the Specification**

The specification has been amended at paragraph [0110] to describe the location of the bed drain nozzle relative to the fluidized bed 14, as seen in Fig. 6. This paragraph has further been amended to describe the action of the gaseous medium that passes through the bed drain nozzle. Support for the added language in the paragraph comes, in part, from original claim 33 which read the step of “feeding a gaseous medium through the solids collection reservoir, the gaseous medium comprising an oxygen-containing gas, the gaseous medium gasifying carbon particles that have accumulated in the bottom portion of the fluidized bed.”

It is believed that no new matter has been introduced into the application by the present changes to the specification.

#### **Amendments to the Claims**

Independent claim 19 has been amended to include the limitations of now-canceled claim 27.

Independent claims 33, 94 and 106 have been amended to recite that:

- (1) the solids collection reservoir<sup>2</sup> is located below the bottom portion of the fluidized bed, and
- (2) gaseous medium is fed through the solids collection reservoir and into the bottom portion of the fluidized bed.

In claims 33 and 94, it is specifically stated that the gaseous medium gasifies carbon particles in the bottom portion of the fluidized bed. It is believed that no new matter has been introduced into the application by the present changes to the claims.

#### **Patentability of pending independent claim 19**

Pending claim 19 now includes the limitations of canceled claim 27. In the June 10, 2008 final office action, claim 27 was rejected as being obvious over Ashworth in view of Mansour.

In formulating the rejection of claim 19 over this combination of references, the Examiner first conceded that:

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<sup>2</sup> In paragraph [0014] of the present published application 2004/0182000, it is explained that one embodiment of the “solids collection reservoir” is a ‘bed drain nozzle’.

[t]he method of Ashworth teaches utilizing heat from the partial combustion of char in second fluidized bed (40) as the sole source of heat required for the first fluidized bed (30, see abstract). As such, Ashworth does not teach a pulse combustion device which heats the first fluidized bed where an endothermic reaction takes place.”

The Examiner then went on to assert that:

[a]dding the pulse combustor of Mansour to the first fluidized bed of Ashworth would have been obvious . . . as a means to supplement the sole heat source for the endothermic reaction which takes place in the first fluidized bed with a highly efficient means to add heat . . Furthermore, such modification would amount to nothing more than applying a known technique to a known device to yield predictable results.”

It is submitted that, contrary to the Examiner’s assertion, one skilled in the art would not be likely to modify Ashworth’s first fluid bed reactor by adding pulse heaters. This is because Ashworth teaches away adding external heat source to the first fluidized bed. In particular, as stated at col. 6, lines 33-41 of Ashworth:

The pyrolysis unit 30 employs a fluidized bed of hot ash and char. Preheated steam from conduit 31 is injected upwardly into the fluid bed as the fluidizing medium, whereby hydrogen required for the hydrogenation and hydrocracking reactions is produced by way of the steam-carbon and water-gas-shift reactions. No air or oxygen is required, and direct heating is not necessary because the heat requirements are supplied by hot recycled ash from the char gasification unit 40.  
at col.

In other words, due to heat created by “hot recycled ash” from the second fluidized bed, one skilled in art would understand that Ashworth obviates the need to have separate heating of the first fluidized bed. It is therefore submitted that one skilled in the art would not be inclined to indirectly heat the first fluidized bed with a pulse combustion device, as called for in pending claim 19.

It is additionally submitted that the Examiner’s observation that such a modification is simply “applying a known technique to a known device to yield predictable results” is entirely inapplicable in this instance, where the reference disclosing the “known device” actually teaches away from the suggested modification.

In view of the foregoing, pending claim 19, and all claims depending thereon, are believed to define over the Ashworth in view of Mansour.

**Patentability of pending independent claims 33, 94 and 106**

It is submitted that pending independent claims 33, 94 and 106 define over the cited combination of references. Claims 33, 94 and 106 now recite that:

- (1) the solids collection reservoir is located below the bottom portion of the fluidized bed; and
- (2) the gaseous medium is fed through the solids collection reservoir and into the bottom portion of the fluidized bed.

It is submitted that no combination of the prior art teaches this combination of features, and so independent claims 33, 94 and 106, and all claims depending thereon, should be allowed.

In addition, claim 33 and 94 further specify that the gaseous medium gasifies carbon particles in the bottom portion of the fluidize bed. For this separate reason, claims 33 and 94, and all claims depending thereon, should also be allowed.

With respect to all claims not specifically mentioned, it is submitted that these are patentable not only by virtue of their dependency on their respective base claims and any intervening claims, but also for the totality of features recited therein.

Reconsideration of the application is requested. All pending claims are believed to be allowable over the prior art of record. An early notice of allowance is solicited so that the application may proceed to issue.

No fee is believed to be due for the claim changes of the present amendment. Should a fee be required, the Director is authorized to charge any such fee to Womble Carlyle's Deposit Account No. 09-0528 (T127 1010.1).

Respectfully Submitted,

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